Community Update

WLPSG

WHITMOYER LABORATORIES
PRIVATE STUDY GROUP

Fall 1998 Issue Number 8

OU Six-Groundwater

Groundwater Treatment Plant Begins Operations

The groundwater treatment facility at the Whitmoyer site is operating smoothly. Start-up tests, using "clean" city water to check the operating system were conducted in May. Test batches of contaminated groundwater were then introduced. The system operated successfully.

The plant began operations in June, gradually increasing the flow of water from 50 gallons per minute (gpm) to 120 gpm. During this start-up phase the flow was altered and rates increased and decreased to test aquifer conditions, measure groundwater levels, and monitor water quality in the Tulpehocken Creek.

The treatment plant operated at a reduced flow through July and August, increasing the flow rate every few

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Officials gathered to launch the start-up of the groundwater treatment facility at a ribbon-cutting ceremony July 10, 1998. Seen here left to right are: Jim Flesher, PADEP; Matt Yunaska, Rohm and Haas Company; Chris Corbett, USEPA; Abe Ferdas, USEPA; Tom Beggs, SmithKline Beecham; Glenn Miller, Mayor; Dean Moyer, Jackson Township supervisor; Rep. Peter Zug, (Myerstown); and U. S. Congressman George W. Gekas.

Informational Meeting

December 1, 1998

at 7:00 P.M.

Jackson Township Building

60 North Ramona Road

The United States Environmental Protection Agency will be holding an informational meeting to discuss the recent Revised Explanation of Significant Differences (ESD) to the Remedy for Operable Unit–Five (Lagoons) and Operable Unit–Three (Soils & Sediments). The ESD allows for off-site treatment of hazardous lagoon wastes and the heavily contaminated unsaturated soils. It also enables excavated lagoons to be addressed as soils under OU-Three.

The current excavation activities will be discussed and a video will be shown.

Groundwater treatment

— *continued from page 1*

days. At the same time, the groundwater extraction system was also being optimized. In the past three months of operation (July–September) the treatment facility has processed over 9.7 million gallons of water.

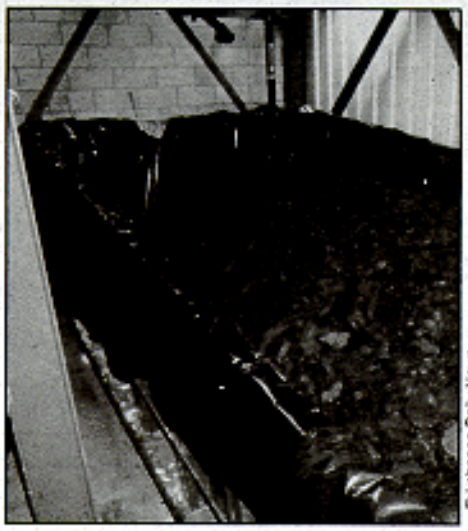
The treated water leaving the plant is tested and consistently meets the criteria (a monthly average of 0.392 mg/L) for arsenic set by the Pennsylvania Department of Environmental Protection. The highest recorded arsenic in the treated water to date was 0.069 mg/L.

"The water is essentially cleaner than what's in the Susquehanna when we get done with it," says John Druga, start-up engineer. Treated water is discharged to the Tulpehocken Creek just north of the site.

The facility was designed and will be operated, for the next five years, by Chester Engineers (US Filter), Pittsburgh. Construction was completed by Remediation Inc. of Dover. Integrated Compliance Engineers, Wilkes Barre, provided overall occupation safety and health consulting. The total design and construction cost about $6 million and included the drilling and installation of 14 extraction wells both on and off-site. The drilling was completed by Eichelbergers, Inc. of Mechanicsburg. Nonhazardous sludge from the plant will be transported to Waste Management GROWS Landfill in Morrisville.

Just how does this water treatment system work?

Inside the new water treatment facility is a maze of pipes, tanks, and sealed carbon and sand filters. Outside there is a silo of lime, and tanks of contaminated water, hydrogen peroxide, and "pickle liquor" — not vinegar or booze — but a by-product of steel production containing high concentrations of both iron and hydrochloric acid.



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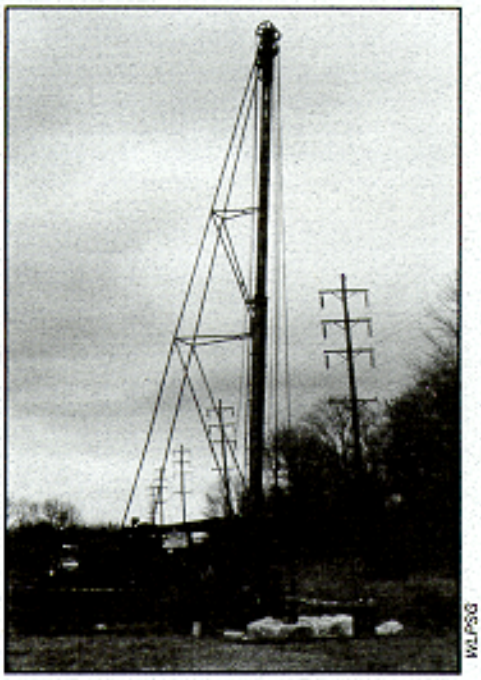
The arsenic/iron/lime sludge (ferrous chloride) after it is extracted from the filter press falls into a roll-off container. This material, no longer hazardous, can be disposed of in a municipal landfill.

When the contaminated water is mixed in the correct proportions with the pickle liquor and hydrogen peroxide a chemical reaction occurs. The arsenic chemically bonds with the iron. Lime is introduced to neutralize the solution and cause the arsenic and iron compounds to precipitate down into a dense sludge of ferrous chloride.



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An Eichelbergers' drilling rig is positioned to begin drilling an extraction well off Fairlane Avenue.

Treated water is then extracted from the sludge as it passes into a filter press. The water continues through the plant into carbon and sand filters to extract any remaining particles. The treated water is discharged to the Tulpehocken Creek.

The arsenic is left behind in the filter press. When the filter press is emptied, the arsenic/iron/lime sludge (ferrous chloride) falls into a special roll-off container. The sludge is almost dry, it looks like red clay cakes. At this point the arsenic, bonded with the iron, is no longer hazardous. It can be shipped to a municipal landfill for disposal.

"This plant is a grand example of effective and efficient use of innovative technologies," says Chris Corbett, USEPA project manager. "Here we're using a waste product from the steel industry and utilizing it to clean up hazardous water."

Construction and operation of the Treatment Plant

In the fall of 1997, drilling began on and off-site for the 14 extraction and monitoring wells, connecting pipes were laid below the frost line in trenches. Simultaneously, on-site construction began on the treatment plant: first pouring a foundation, then laying concrete pads, and finally placing the large tanks.

Engineers carefully inspected each tank and vessel as it arrived to make

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Operable Units (ous)

The process of site remediation is very structured. In an effort to consolidate work and focus on the various tasks, the USEPA organizes projects into sections called Operable Units (OUS).

OU–One related to Concentrated Liquids Stored in Tanks and Other Vessels. The EPA completed OU–One in 1990.

OU–Two Buildings, Structures, and Miscellaneous Products and Feedstocks. This unit was "certified complete" by the USEPA in September, 1996.

Four units remain:

OU–Three Soils and Sediments, which includes all soils on the 22 acre site and contaminated soils on adjacent properties; soils sampling and analysis is currently underway. Remediation of this OU is expected to begin in 2000.

OU–Four Vault Wastes and Buried Drums, on-site remediation is now complete; off-site incineration is expected to be completed in January 1999.

OU–Five Lagoons two separate areas where 15 evaporation lagoons were once located, excavation of the "consolidated" lagoons is now underway and expected to be completed by February 1999.

and **OU–Six Groundwater,** the water treatment plant is now in operation. This operable unit will continue for many years.

OU Five – Lagoons

Cleanup Begins on "Consolidated" Lagoons

The excavation of approximately 13,000 yards of contaminated soils and sludge from the 1.25-acre consolidated lagoon, once eight separate lagoons, is now underway (see map). Wastes from the consolidated lagoons will be removed by mid winter.

Excavation began in mid-September, 1998 and is expected to be completed before February, 1999. The excavation of the consolidated lagoon area is being conducted under Operable Unit (OU) Five–Lagoons. Hazardous and non-hazardous lagoon wastes are being transported off-site, via rail, to US Ecology's Beatty, Nevada, facility for treatment and disposal.

Sevenson Environmental Services, Inc. of Niagara Falls, New York, is the contractor for the on-site excavation and removal.

Lagoon History

Today the lagoons are dry and appear like a grassy field. Moisture evaporated years ago, yet contaminants remain underground in the soil. The soil is contaminated with arsenic from manufacturing at the site when the Whitmoyer Laboratories were in full operation.

In the mid 1960s the calcium arsenic sludge in the lagoon area was removed and placed on-site in a concrete vault. (Those soils were shipped off-site, treated, and disposed during previous phases of OU Four–Vault Wastes, 1994 through 1998).

Later these same lagoons were used during a groundwater pump and treat program which generated an iron- arsenic compound. The seven lagoons to the west underwent a preliminary clean-up and were excavated and "con-

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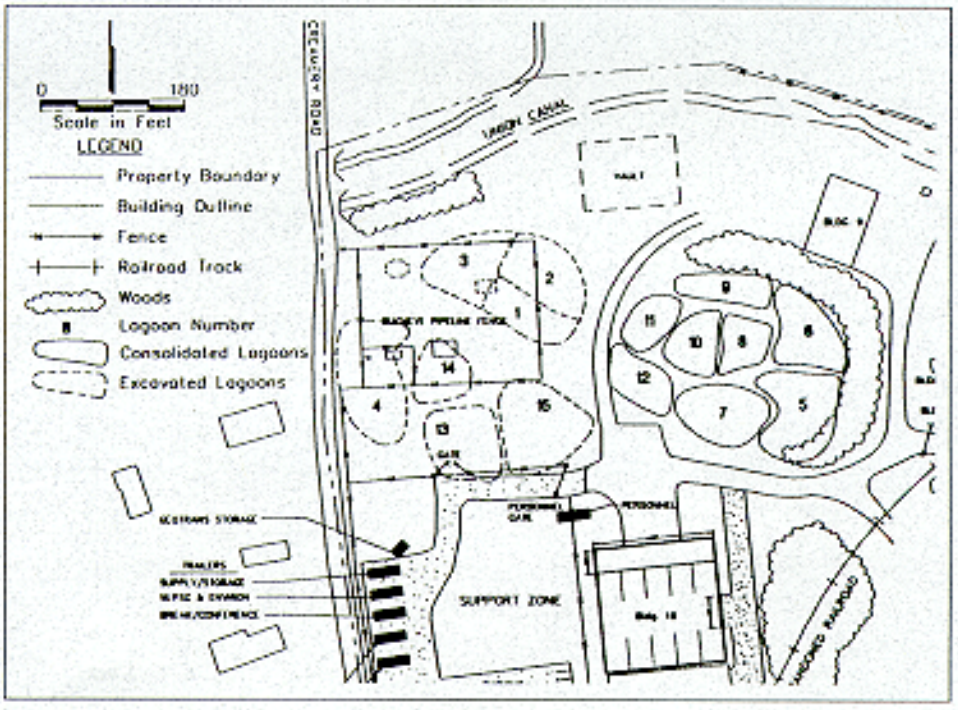

Lagoons

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solidated" with the eight lagoons to the east. The "consolidated" lagoons were capped with approximately a foot of clean soil.

Analysis of Lagoon Soils

During the past several years preliminary testing on the site indicated that the contaminant levels of the lagoon area varied. To effectively and economically clean up the site, careful analysis was necessary.

In the fall of 1997, extensive sampling and analysis resulted in identifying and charting specific horizontal and vertical contamination. The procedure involved analysis of old aerial photographs for mapping. The maps were then overlaid with a detailed grid pattern that was sampled in 50 x 50 foot segments, from zero to one foot below ground surface. Deeper layers were sampled at 25 x 25 foot segments, and typically four feet thick depths, to bedrock. The sampling extended outward from the center of the consolidated lagoon area.

In general the consolidated lagoons have distinct layers of materials. The soil cap thickness ranges from about 2 inches to a foot in depth, beneath that are layers comprised of brown sandy silt, gray limestone gravel, and moist red brown clay silt/sludge. The bottom most layer is a weathered limestone, which underlies the entire lagoon area. The layering is not uniform and varies in thickness by location in each lagoon. Bedrock depth varies from about one and a half feet to 16 feet below grade with an average depth of about seven feet.

ENVIRON Corporation

The excavation of the consolidated lagoons is underway, 50 x 50 foot sections are removed at a time, enabling the soils and wastes to be separated by type.

ENVIRON Corporation

Sevenson Environmental employees wear Level C personal protective equipment while transferring the lagoon wastes. Wastes are being shipped off-site for treatment and disposal; it is anticipated that this phase of construction activities will be completed early in 1999.

The soil samples were collected with a sampling tube, and each then transferred into a separate container for analysis. The sampling was conducted by Terra Probe, Inc. of Easton and Advanced Drilling of Washington, New Jersey, the technical oversight was conducted by ENVIRON Corporation, of Princeton, New Jersey. Health and safety oversight was handled by Integrated Environmental Compliance. The soils samples were then shipped to Lancaster Laboratories, in Lancaster, for analysis.

Classification of Lagoon Material

The soils were designated as three distinct types: "Hazardous Lagoon Waste," "Non-Hazardous Lagoon Waste," and "Non-Hazardous Lagoon Material."

The "Hazardous Lagoon Waste" is in the center and eastern portion of the consolidated lagoons. It is this material, about 7,000 cubic yards, which is being excavated, treated off-site and disposed of at the U.S. Ecology, Beatty, Nevada, site.

The contaminated soils are carefully being removed and placed into poly-lined rail cars, covered with a special protecting cover, and shipped

via Conrail and the Union Pacific railroads to Nevada.

"It is anticipated that between 220 to 240 carloads will be shipped over the five-month period," says Ray Johnson, site construction manager.

On Tuesdays and Thursdays, the train stops in Myerstown to couple-up the filled cars. Six to seven cars are shipped each time.

During excavation the workers wear Level C personal protective equipment. "This includes respirators to protect their breathing any dust particles that might be generated and the white Tyvek suit over their regular work clothes," explains Johnson.

"The air is monitored in the area to ensure that dust and particulate matter is minimized and kept on-site." If the process develops any dust, the soils are misted with water in the same manner that was used while building demolition occurred in previous work phases.

Other Lagoon Soils

About 6,000 cubic yards of "Non-Hazardous Lagoon Waste" is also being excavated and disposed of off-site at the U.S. Ecology, Beatty, Nevada, site.

The remainder of the "Non-Hazardous Lagoon Material," about 4,000 cubic yards, will remain on-site and be addressed with the remedy for OU Three–Soils and Sediments.

Clean-up of the consolidated lagoons is in accordance with the Record of Decision (ROD) and the subsequent Explanation of Significant Differences (ESD), allowing off-site fixation of excavated hazardous lagoon wastes.

OU Four – Vault Wastes

No Incineration On-Site Upper Vault Soils Removal Complete

Residents of Myerstown were pleased to hear the final word, no on-site incineration would take place at the Whitmoyer site.

On-site work to remove the upper vault soils took place in June, 1998. Approximately 1,400 cubic yards, about 1,350 tons of soils, were transported by 15 railcars to the US Ecology Facility in Beatty, Nevada. The last of the railcars left the Whitmoyer site on June 16.

Although the original Record of Decision (ROD) stated that these vault soils should be incinerated on-site, the EPA approved a ROD amendment allowing for the off-site treatment and disposal. This new method of disposal was allowed because of advancements in technology since the original ROD was signed in 1990. The soils were treated with cement and other binding agents to fix the contamination. They were then disposed of in Beatty.

"The removal of the upper vault soils represents the last of the vault wastes on-site," Tom Fizzano, Operable Unit Four Coordinator, said. "Everything from the vault has been removed from the site."

On August 17, US Ecology completed the treatment and disposal of the upper vault soils.

The project contractor for on-site removal was Sevenson Environmental Services, Inc., of Niagara Falls, New York. Operable Unit 4 on-site removal work is now complete.

Upper vault wastes carefully were removed from building 18 and loaded into 15 poly-lined rail cars for shipment to the US Ecology facility in Beatty, Nevada, for treatment and disposal.

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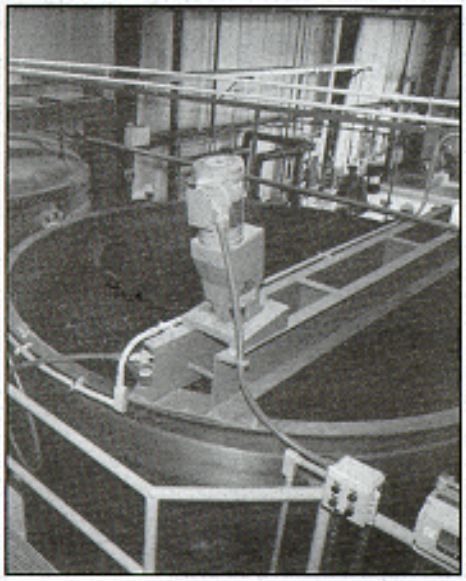

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Footers and foundation is being poured prior to the construction of the new water treatment facility.

Groundwater treatment

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certain they were flawless. A special x-ray scanning device was used to reveal even the slightest crack or fissure; none were detected. A maze of pipes, gauges, and grids was used to connect each of the tanks and vessels.

Contractors erected structural steel around the tanks and then positioned the outer layers of the building's shell. Inside the building, engineers directed the work of plumbers, electricians and welders until at last the physical structure was complete. Gauges and recording devices are connected to a central computer, where the plant operator can observe and monitor operations.

The computer can operate the plant in an automatic mode, adjusting the flow of incoming contaminated water and outgoing treated water. With the Programmable Logic Controller (PLC), the operator can make adjustments to the computer and thus operations of the plant from remote locations.

The plant is designed to operate 24 hours a day, year-round. Yet because of the sophisticated computer system and the PLC, the plant can be operated by a single plant manager, eliminating the need for a staff of on-site technicians.

"The computer will shut down the plant automatically if any problem should occur. It will simultaneously call me via a modem, to a paging system, or directly to my home," says plant manager Pat Anderson. "There's a whole lot of safeguards in this plant."

Each of the automatic systems can be overridden by the plant manager using manual controls or he can make adjustments remotely when not on-site, directly to the computer.

Another unique safety guard of the plant is the on-site laboratory, where full-time laboratory technician Jim Kaulbach monitors and tests both incoming and outgoing water. Samples of water are tested throughout the day. Information and data is analyzed and adjustments can be entered directly into the operating computer.

An independent laboratory also analyzes these water samples to document compliance with all of the USEPA and PADEP regulations.

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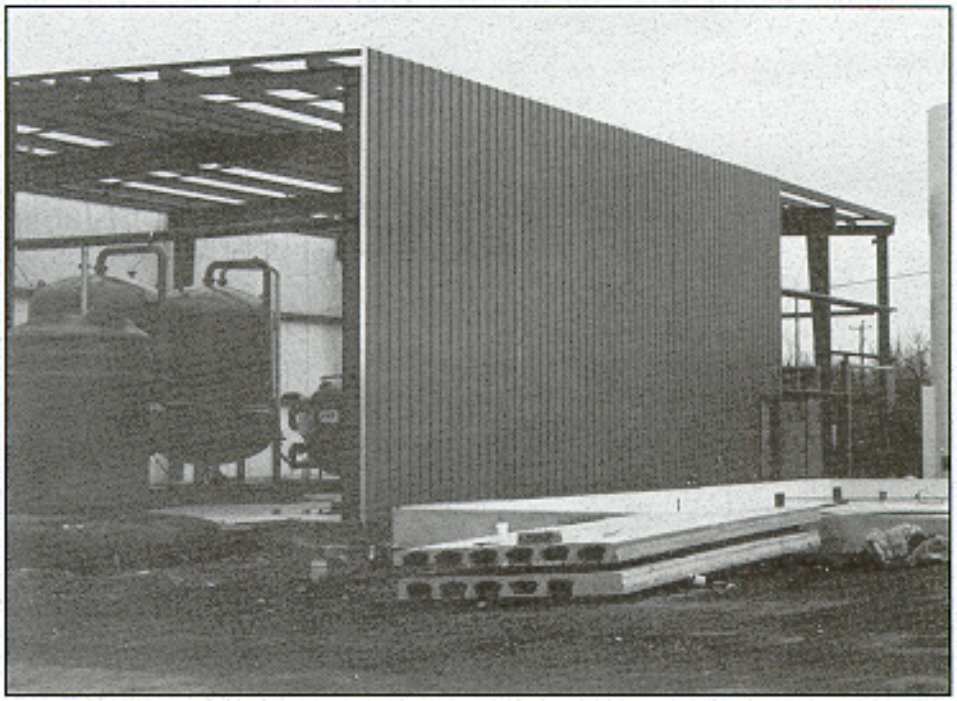
Water passes through a series of treatment tanks and filtering devices before it is ready for discharge. Arsenic is withdrawn from the water through a chemical-bonding process.

Once the large filtering tanks were in place, the outer structure of the water treatment facility was put into place. The water treatment system features the most innovative technology and computer operating controls, enabling the system to run 24 hours a day, 365 days of the year, with only one on-site plant manager.



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Factoid

For four years, during the summer months, a pilot treatment facility demonstrated that the groundwater at the Whitmoyer site could be cleaned up through a process of chemical scrubbing and fixation. That plant operated on a very limited scale from 1994 through 1997. It eventually treated 1,904,700 gallons of water. The new treatment plant will clean up as much as 2 million gallons of water per week.

OU Three – Soils

ESD Requests Off-site Treatment of Soils

An Explanation of Significant Differences (ESD) has been requested for the clean-up remedies of Operable Unit (OU) Three – Soils and Sediments and OU Five – Lagoons. The request asks the United States Environmental Protection Agency to allow off-site (rather than on-site) treatment of the heavily contaminated unsaturated soils and hazardous lagoon wastes, and that excavated lagoon materials be addressed as soils under OU Three rather than OU Five.

During the past year, over 1,200 soil samples have been taken to help delineate and analyze the extent of contaminants. These samples are now undergoing analysis and mapping. It is anticipated that OU Three – Soils and Sediments construction and remediation activities will begin during the year 2000. USEPA was finalizing the required documentation at the time of this publication.

OU Six – Groundwater

Just the Facts:

Groundwater Treatment Facility at Whitmoyer Laboratories Superfund Site

- System utilizes 14 wells for removal of ground water from both shallow (0–150') and mid-level (150'–400") zones. System uses both newly installed wells and retrofitted wells.
- Groundwater transferred to treatment plant via approximately 3,700 feet of underground piping. Additional wells may be connected to system in future.
- Groundwater removed from wells using pumps ranging in size from ½ to 2 horsepower.
- Treatment plant designed for a flow rate of 180 to 240 gallons per minute. Plant can handle water at lower flows or can be readily expanded to handle up to 360 gpm.
- Extraction and treatment system constructed from August 1997 to April 1998. Preliminary and system testing began in May 1998.
- Treatment plant is designed for automatic operation, 24 hours per day, 365 days per year.
- Treatment system primarily removes arsenic from the groundwater, also aniline and several volatile organic compounds.
- Arsenic concentrations of the groundwater coming into the treatment plant range from approximately 15.0 to 30.0 mg/l depending upon flows from each well. Treatment plant can handle concentrations up to 40.0 mg/l. Treated outgoing water concentration average approximately 0.02 to 0.03 mg/l (state requirement is 0.392 mg/l).
- Treatment plant has an in-house laboratory to monitor incoming and outgoing water. WLPSG also utilizes an outside independent laboratory for quality assurance.

Information Available

The EPA maintains a local information repository providing residents access to documents about the site cleanup. You can review these documents at:

MYERSTOWN PUBLIC LIBRARY
199 North College Street
Myerstown, PA 17067
(717) 866-2800

Keeping You Informed

To help answer any questions you may have, the WLPSG maintains a toll-free number.

The number is:
(800) 334-5263

or you may call or write:

Lisa Brown
Community Involvement Coordinator
Hazardous Sites Cleanup Division

at the USEPA:
(800) 553-2509
or (215) 814-5528

Environmental Protection Agency
Office of Public Affairs (3HS43)
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Philadelphia, PA 19103-2029
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The *Community Update* is published by the Whitmoyer Laboratories Private Study Group.

If you are interested in being placed on a mailing list or would like to correspond to the editor of the *Update* you may write to:

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Just what is the WLPSG?

The Whitmoyer Laboratories Private Study Group (WLPSG) has been formed to coordinate cleanup tasks at the site of the former Whitmoyer Laboratories.

The cleanup work is planned and funded by the Whitmoyer Laboratories Private Study Group and is designed by ENVIRON, an environmental engineering and health science firm from Princeton, New Jersey.

All of the work is performed under the authority and quality assurance procedures of both the United States Environmental Protection Agency (USEPA) and the Pennsylvania Department of Environmental Protection (PADEP).

Whitmoyer Laboratories Site Located in Jackson Township

The Whitmoyer Laboratories Site occupies approximately 22 acres in Jackson Township, Lebanon County, Pennsylvania, about one mile southwest of the Borough of Myerstown.

The Site is bordered to the north by the Union Canal, to the west by Creamery Road, to the south by Conrail Railroad tracks and to the east by Fairlane Avenue.

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Right: U. S. Congressman George W. Gekas (R-17th District) was on hand for the ribbon cutting and official start-up of the water treatment facility.

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99 Creamery Road
Myerstown, PA 17067